

AMENDMENTS TO THE CLAIMS

Listing of Claims:

1-44. (Cancelled)

45. (Currently amended) A method for increasing the production of starch and/or oil, comprising growing a transformed plant that overexpresses at least one hemoglobin and recovering the starch and/or oil from said transformed plant, wherein the expression of the at least one hemoglobin results in an increase in starch and/or oil content in the transformed plant as compared with a wild-type control plant.

46. (Cancelled)

47. (Currently amended) The method of claim 45, wherein the at least one hemoglobin is from a plant selected from the group consisting of *Lupinus luteus*, *Glycine max*, *Medicago sativa*, *Medicago trunculata*, *Phaseolus vulgaris*, *Vicia faba*, *Pisum sativum*, *Vigna unguiculata*, *Lotus japonicus*, *Psophocarpus tetragonolobus*, *Sesbania rostrata*, *Casuarina glauca*, *Canvalaria lineata*, *Physcomitrella patens*, *Arabidopsis thaliana*, *Gossypium hirsutum*, *Oryza sativa*, *Brassica napus*, *Lycopersicon esculentum*, *Hordeum vulgare*, *Zea mays*, *Trema tomentosa*, and *Parasponia rigida*.

48. (Currently amended) The method of claim 45, wherein the at least one hemoglobin is from *Arabidopsis thaliana*.

49. (Currently amended) The method of claim 45, wherein the at least one hemoglobin is expressed in a storage-organ-specific manner.

50. (Currently amended) The method of claim 45, wherein the at least one hemoglobin is expressed in a tuber-specific, seed-specific, or tuber- and seed-specific manner.

51. (Currently amended) The method of claim 45, wherein the at least one hemoglobin is encoded by a nucleotide sequence having at least 95% identity with the nucleotide sequence as set forth in SEQ ID NO: 5 and the transformed plant produces an increased amount of storage reserves has an increase in starch and/or oil content as compared with a wild-type control plant.

52. (Currently amended) The method of claim 45, wherein the at least one hemoglobin is encoded by the nucleotide sequence as set forth in SEQ ID NO: 5.

53. (Previously presented) The method of claim 45, wherein the transformed plant is a monocotyledonous crop plant.

54. (Previously presented) The method of claim 45, wherein the transformed plant is a *Gramineae* species.

55. (Previously presented) The method of claim 45, wherein the transformed plant is a dicotyledonous crop plant.

56. (Previously presented) The method of claim 45, wherein the transformed plant is a *Asteraceae*, *Brassicacea*, *Compositae*, *Cruciferae*, *Cucurbitaceae*, *Leguminosae*, *Rubiaceae*, *Solanaceae*, *Sterculiaceae*, *Theaceae* or *Umbelliferae* species.

57. (Previously presented) The method of claim 45, wherein the transformed plant is selected from the group consisting of *Borago officinalis* (borage), *Brassica campestris*, *Brassica napus*, *Brassica rapa* (mustard or oilseed rape), *Cannabis sativa* (hemp), *Carthamus tinctorius* (safflower), *Cocos nucifera* (coconut), *Crambe abyssinica* (crambe), *Cuphea* species, *Elaeis guinensis* (African oil palm), *Elaeis oleifera* (American oil palm), *Glycine max* (soybean), *Gossypium hirsutum* (American cotton), *Gossypium barbadense* (Egyptian cotton), *Gossypium herbaceum* (Asian cotton), *Helianthus annuus* (sunflower), *Linum usitatissimum* (linseed or flax), *Oenothera biennis* (evening primrose), *Olea europea* (olive), *Oryza sativa* (rice), *Ricinus communis* (castor-oil plant), *Sesamum indicum* (sesame), *Triticum* species (wheat), *Zea mays* (maize), walnut and almond.

58. (Previously presented) The method of claim 45, wherein the transformed plant is potato, *Arabidopsis thaliana*, soybean or oilseed rape.

59. (Previously presented) The method of claim 45, wherein the transformed plant is a T2 plant.

60. (Currently amended) A method of achieving a better utilization of areas under cultivation or a better utilization of fertilizer, comprising growing transformed plants that overexpress at least one hemoglobin in said area, wherein the expression of the at least one hemoglobin increases the storage reserve content in storage organs of the transformed plant as compared with a wild-type control plant.

61. (Currently amended) The method of claim 45, wherein the expression of the at least one hemoglobin results in an increase in starch content in the transformed plant as compared with a wild-type control plant.

62. (Cancelled)

63. (Currently amended) A method for increasing the production of oil, comprising growing a transformed plant that overexpresses at least one hemoglobin in a seed specific manner and recovering the oil from the seeds of said transformed plant, wherein the expression of the at least one hemoglobin results in an increase in oil content in the seeds of the transformed plant as compared with a wild-type control plant.

64. (New) The method of claim 63, wherein the at least one hemoglobin is from a plant selected from the group consisting of *Arabidopsis thaliana*, *Lupinus luteus*, *Glycine max*, *Medicago sativa*, *Medicago trunculata*, *Phaseolus vulgaris*, *Vicia faba*, *Pisum sativum*, *Vigna unguiculata*, *Lotus japonicus*, *Psophocarpus tetragonolobus*, *Sesbania rostrata*, *Casuarina glauca*, *Canvalaria lineata*, *Physcomitrella patens*, *Arabidopsis thaliana*, *Gossypium hirsutum*, *Oryza sativa*, *Brassica napus*, *Lycopersicon esculentum*, *Hordeum vulgare*, *Zea mays*, *Trema tomentosa*, and *Parasponia rigida*.

65. (New) The method of claim 63, wherein the at least one hemoglobin is encoded by the nucleotide sequence as set forth in SEQ ID NO: 5 or a nucleotide sequence having at least 95% identity with the nucleotide sequence as set forth in SEQ ID NO: 5 and the transformed plant has an increase in oil content as compared with a wild-type control plant.

66. (New) The method of claim 63, wherein the transformed plant is a monocotyledonous crop plant or a dicotyledonous crop plant.

67. (New) The method of claim 63, wherein the transformed plant is a *Asteraceae*, *Brassicaceae*, *Compositae*, *Cruciferae*, *Cucurbitaceae*, *Gramineae*, *Leguminosae*, *Rubiaceae*, *Solanaceae*, *Sterculiaceae*, *Theaceae* or *Umbelliferae* species.

68. (New) The method of claim 63, wherein the transformed plant is selected from the group consisting of *Arabidopsis thaliana*, *Borago officinalis* (borage), *Brassica campestris*, *Brassica napus*, *Brassica rapa* (mustard or oilseed rape), *Cannabis sativa* (hemp), *Carthamus tinctorius* (safflower), *Cocos nucifera* (coconut), *Crambe abyssinica* (crambe), *Cuphea* species, *Elaeis*

guinensis (African oil palm), *Elaeis oleifera* (American oil palm), *Glycine max* (soybean), *Gossypium hirsutum* (American cotton), *Gossypium barbadense* (Egyptian cotton), *Gossypium herbaceum* (Asian cotton), *Helianthus annuus* (sunflower), *Linum usitatissimum* (linseed or flax), *Oenothera biennis* (evening primrose), *Olea europaea* (olive), *Oryza sativa* (rice), *Ricinus communis* (castor-oil plant), *Sesamum indicum* (sesame), *Triticum* species (wheat), *Zea mays* (maize), potato, walnut and almond.

69. (New) A method for increasing starch and/or oil content in a plant, comprising transforming at least one hemoglobin into a plant, overexpressing said at least one hemoglobin in the plant, and selecting a transformed plant with increased starch and/or oil content, wherein the expression of the at least one hemoglobin results in an increase in starch and/or oil content in said transformed plant as compared with a wild-type control plant.

70. (New) The method of claim 69, wherein the at least one hemoglobin is from a plant selected from the group consisting of *Arabidopsis thaliana*, *Lupinus luteus*, *Glycine max*, *Medicago sativa*, *Medicago trunculata*, *Phaseolus vulgaris*, *Vicia faba*, *Pisum sativum*, *Vigna unguiculata*, *Lotus japonicus*, *Psophocarpus tetragonolobus*, *Sesbania rostrata*, *Casuarina glauca*, *Canvalaria lineata*, *Physcomitrella patens*, *Arabidopsis thaliana*, *Gossypium hirsutum*, *Oryza sativa*, *Brassica napus*, *Lycopersicon esculentum*, *Hordeum vulgare*, *Zea mays*, *Trema tomentosa*, and *Parasponia rigida*.

71. (New) The method of claim 69, wherein the at least one hemoglobin is expressed in a storage-organ-specific manner.

72. (New) The method of claim 69, wherein the at least one hemoglobin is expressed in tuber-specific, seed-specific, or tuber- and seed-specific manner.

73. (New) The method of claim 69, wherein the hemoglobin is encoded by the nucleotide sequence as set forth in SEQ ID NO: 5 or a nucleotide sequence having at least 95% identity with the nucleotide sequence as set forth in SEQ ID NO: 5 and the transformed plant has an increase in starch and/or oil content as compared with a wild-type control plant.

74. (New) The method of claim 69, wherein the transformed plant is a monocotyledonous crop plant or a dicotyledonous crop plant.

75. (New) The method of claim 69, wherein the transformed plant is a *Asteraceae*, *Brassicaceae*, *Compositae*, *Cruciferae*, *Cucurbitaceae*, *Gramineae*, *Leguminosae*, *Rubiaceae*, *Solanaceae*, *Sterculiaceae*, *Theaceae* or *Umbelliferae* species.

76. (New) The method of claim 69, wherein the transformed plant is selected from the group consisting of *Arabidopsis thaliana*, *Borago officinalis* (borage), *Brassica campestris*, *Brassica napus*, *Brassica rapa* (mustard or oilseed rape), *Cannabis sativa* (hemp), *Carthamus tinctorius* (safflower), *Cocos nucifera* (coconut), *Crambe abyssinica* (crambe), *Cuphea* species, *Elaeis guinensis* (African oil palm), *Elaeis oleifera* (American oil palm), *Glycine max* (soybean), *Gossypium hirsutum* (American cotton), *Gossypium barbadense* (Egyptian cotton), *Gossypium herbaceum* (Asian cotton), *Helianthus annuus* (sunflower), *Linum usitatissimum* (linseed or flax), *Oenothera biennis* (evening primrose), *Olea europaea* (olive), *Oryza sativa* (rice), *Ricinus communis* (castor-oil plant), *Sesamum indicum* (sesame), *Triticum* species (wheat), *Zea mays* (maize), potato, walnut and almond.

77. (New) The method of claim 45, wherein the expression of the at least one hemoglobin results in an increase in starch and oil content in the transformed plant as compared with a wild-type control plant.